

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Westfield  
Westfield Executive Park  
53 Southampton Road  
Westfield, MA 01085  
Tel: (413)572-4000

CHECKED FOR COMPLETENESS  
OF PARAMETERS ORDERED BY:

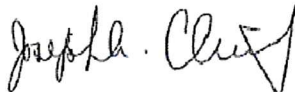
TestAmerica Job ID: 360-39540-1

Client Project/Site: Olin Chemical Groundwater

For:

Olin Corporation  
PO BOX 248  
Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell



Authorized for release by:

3/22/2012 9:16:08 AM

Joe Chimi

Report Production Representative

[joe.chimi@testamericainc.com](mailto:joe.chimi@testamericainc.com)

Designee for

Becky Mason

Project Manager II

[becky.mason@testamericainc.com](mailto:becky.mason@testamericainc.com)

### LINKS

Review your project  
results through

**TotalAccess**

Have a Question?

 **Ask  
The  
Expert**

Visit us at:

[www.testamericainc.com](http://www.testamericainc.com)

The test results in this report meet all 2003 NELAP and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Case Narrative . . . . .	3
Detection Summary . . . . .	5
Method Summary . . . . .	6
Sample Summary . . . . .	7
Client Sample Results . . . . .	8
Definitions . . . . .	12
QC Association . . . . .	13
QC Sample Results . . . . .	15
Chronicle . . . . .	17
Certification Summary . . . . .	18
Receipt Checklists . . . . .	20
Chain of Custody . . . . .	21



## Case Narrative

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Job ID: 360-39540-1**

**Laboratory: TestAmerica Westfield**

### Narrative

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### Receipt

The samples were received on 03/13/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.2°C.

### Metals

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No analytical or quality issues were noted.

### General Chemistry

No analytical or quality issues were noted.

# MassDEP Analytical Protocol Certification Form

Laboratory Name: **TestAmerica Westfield** Project #: **360-39540-1**

Project Location: **Olin Quarterly Groundwater** RTN:

This form provides certifications for the following data set: list Laboratory Sample ID Number(s):

**360-39540-(1-4)**

Matrices: ☒ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

## CAM Protocols (check all that apply below):

8260 VOC CAM II A <input type="checkbox"/>	7470/7471 Hg CAM III B <input type="checkbox"/>	Mass DEP VPH CAM IV A <input type="checkbox"/>	8081 Pesticides CAM V B <input type="checkbox"/>	7196 Hex Cr CAM VI B <input type="checkbox"/>	Mass DEP APH CAM IX A <input type="checkbox"/>
8270 SVOC CAM II B <input type="checkbox"/>	7010 Metals CAM III C <input type="checkbox"/>	Mass DEP EPH CAM IV B <input type="checkbox"/>	8151 Herbicides CAM V C <input type="checkbox"/>	8330 Explosives CAM VIII A <input type="checkbox"/>	TO-15 VOC CAM IX B <input type="checkbox"/>
6010 Metals CAM III A <input checked="" type="checkbox"/>	6020 Metals CAM III D <input type="checkbox"/>	8082 PCB CAM V A <input type="checkbox"/>	9014 Total Cyanide/PAC CAM VI A <input type="checkbox"/>	6860 Perchlorate CAM VIII B <input type="checkbox"/>	

## Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

<b>A</b>	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding time.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>E</b>	a. VPH, EPH and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

## Responses to Questions G, H and I below are required for "Presumptive Certainty" status

<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
----------	-----------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

**Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WCS-07-350

<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <sup>1</sup>
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s) ?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <sup>1</sup>

<sup>1</sup> All negative responses must be addressed in an attached laboratory narrative.

*I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.*

Signature:  Position: Laboratory Director

Printed Name: Steven C. Hartmann Date: 3/22/12 9:10

This form has been electronically signed and approved

## Detection Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

### Client Sample ID: OC-GW-78S

### Lab Sample ID: 360-39540-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	5.1		5.0	0.66	ug/L	1		6010C	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	490		20	20	mg/L	10		300.0	Total/NA
Chloride	27		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	53		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

### Client Sample ID: OC-PZ-17-RR

### Lab Sample ID: 360-39540-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	5.1		5.0	0.66	ug/L	1		6010C	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	460		20	20	mg/L	10		300.0	Total/NA
Chloride	22		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	53		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

### Client Sample ID: OC-GW-25

### Lab Sample ID: 360-39540-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	3.1	J	5.0	0.66	ug/L	1		6010C	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	100		20	20	mg/L	10		300.0	Total/NA
Chloride	69		10	10	mg/L	10		300.0	Total/NA
Ammonia	50		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	660		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

### Client Sample ID: OC-PZ-18R

### Lab Sample ID: 360-39540-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	14		5.0	0.66	ug/L	1		6010C	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	790		20	20	mg/L	10		300.0	Total/NA
Chloride	290		10	10	mg/L	10		300.0	Total/NA
Ammonia	140		2.0	2.0	mg/L	20		L107-06-1B	Total/NA
Specific Conductance	2600		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

## Method Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL WFD
300.0	Chloride & Sulfate	40CFR136A	TAL WFD
L107-06-1B	Nitrogen Ammonia	LACHAT	TAL WFD
SM 2510B	Conductivity, Specific Conductance	SM	TAL WFD

### Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

## Sample Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
360-39540-1	OC-GW-78S	Water	03/12/12 08:45	03/13/12 17:00
360-39540-2	OC-PZ-17-RR	Water	03/12/12 09:05	03/13/12 17:00
360-39540-3	OC-GW-25	Water	03/12/12 11:05	03/13/12 17:00
360-39540-4	OC-PZ-18R	Water	03/12/12 10:20	03/13/12 17:00



# Client Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Client Sample ID: OC-GW-78S**

**Lab Sample ID: 360-39540-1**

**Date Collected: 03/12/12 08:45**

**Matrix: Water**

**Date Received: 03/13/12 17:00**

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			03/14/12 15:36	1
Chromium	5.1		5.0	0.66	ug/L			03/14/12 15:36	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	490		20	20	mg/L			03/16/12 04:13	10
Chloride	27		1.0	1.0	mg/L			03/16/12 03:56	1
Ammonia	53		1.0	1.0	mg/L		03/19/12 11:49	03/20/12 16:40	10
Specific Conductance	1300		1.0	1.0	umhos/cm			03/16/12 14:37	1



# Client Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Client Sample ID: OC-PZ-17-RR**

**Lab Sample ID: 360-39540-2**

**Date Collected: 03/12/12 09:05**

**Matrix: Water**

**Date Received: 03/13/12 17:00**

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			03/14/12 15:39	1
Chromium	5.1		5.0	0.66	ug/L			03/14/12 15:39	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	460		20	20	mg/L			03/16/12 04:48	10
Chloride	22		1.0	1.0	mg/L			03/16/12 04:31	1
Ammonia	53		1.0	1.0	mg/L		03/19/12 11:49	03/20/12 16:41	10
Specific Conductance	1300		1.0	1.0	umhos/cm			03/16/12 14:39	1

# Client Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Client Sample ID: OC-GW-25**

**Lab Sample ID: 360-39540-3**

**Date Collected: 03/12/12 11:05**

**Matrix: Water**

**Date Received: 03/13/12 17:00**

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			03/14/12 15:42	1
Chromium	3.1	J	5.0	0.66	ug/L			03/14/12 15:42	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	100		20	20	mg/L			03/16/12 05:22	10
Chloride	69		10	10	mg/L			03/16/12 05:22	10
Ammonia	50		1.0	1.0	mg/L		03/19/12 11:49	03/20/12 16:41	10
Specific Conductance	660		1.0	1.0	umhos/cm			03/16/12 14:45	1

# Client Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Client Sample ID: OC-PZ-18R**

**Lab Sample ID: 360-39540-4**

**Date Collected: 03/12/12 10:20**

**Matrix: Water**

**Date Received: 03/13/12 17:00**

## Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			03/14/12 15:45	1
Chromium	14		5.0	0.66	ug/L			03/14/12 15:45	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	790		20	20	mg/L			03/16/12 23:15	10
Chloride	290		10	10	mg/L			03/16/12 23:15	10
Ammonia	140		2.0	2.0	mg/L		03/19/12 11:49	03/20/12 16:42	20
Specific Conductance	2600		1.0	1.0	umhos/cm			03/16/12 14:48	1

## Definitions/Glossary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

### Qualifiers

#### Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

## Metals

### Analysis Batch: 88431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-1	OC-GW-78S	Dissolved	Water	6010C	
360-39540-2	OC-PZ-17-RR	Dissolved	Water	6010C	
360-39540-3	OC-GW-25	Dissolved	Water	6010C	
360-39540-4	OC-PZ-18R	Dissolved	Water	6010C	
LCS 360-88431/17	Lab Control Sample	Total/NA	Water	6010C	
LCS 360-88431/22	Lab Control Sample Dup	Total/NA	Water	6010C	
MB 360-88431/18	Method Blank	Total/NA	Water	6010C	

## General Chemistry

### Analysis Batch: 88521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-1	OC-GW-78S	Total/NA	Water	SM 2510B	
360-39540-2	OC-PZ-17-RR	Total/NA	Water	SM 2510B	
360-39540-3	OC-GW-25	Total/NA	Water	SM 2510B	
360-39540-3 DU	OC-GW-25	Total/NA	Water	SM 2510B	
360-39540-4	OC-PZ-18R	Total/NA	Water	SM 2510B	
LCS 360-88521/1	Lab Control Sample	Total/NA	Water	SM 2510B	
MB 360-88521/3	Method Blank	Total/NA	Water	SM 2510B	

### Prep Batch: 88533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-1	OC-GW-78S	Total/NA	Water	Distill/Ammonia	
360-39540-2	OC-PZ-17-RR	Total/NA	Water	Distill/Ammonia	
360-39540-3	OC-GW-25	Total/NA	Water	Distill/Ammonia	
360-39540-4	OC-PZ-18R	Total/NA	Water	Distill/Ammonia	
LCS 360-88533/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	
MB 360-88533/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	

### Analysis Batch: 88534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-1	OC-GW-78S	Total/NA	Water	300.0	
360-39540-1	OC-GW-78S	Total/NA	Water	300.0	
360-39540-2	OC-PZ-17-RR	Total/NA	Water	300.0	
360-39540-2	OC-PZ-17-RR	Total/NA	Water	300.0	
360-39540-3	OC-GW-25	Total/NA	Water	300.0	
LCS 360-88534/6	Lab Control Sample	Total/NA	Water	300.0	
MB 360-88534/5	Method Blank	Total/NA	Water	300.0	

### Analysis Batch: 88537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-4	OC-PZ-18R	Total/NA	Water	300.0	
LCS 360-88537/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-88537/3	Method Blank	Total/NA	Water	300.0	

### Analysis Batch: 88627

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-39540-1	OC-GW-78S	Total/NA	Water	L107-06-1B	88533
360-39540-2	OC-PZ-17-RR	Total/NA	Water	L107-06-1B	88533
360-39540-3	OC-GW-25	Total/NA	Water	L107-06-1B	88533
360-39540-4	OC-PZ-18R	Total/NA	Water	L107-06-1B	88533
LCS 360-88533/2-A	Lab Control Sample	Total/NA	Water	L107-06-1B	88533

## QC Association Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

### General Chemistry (Continued)

#### Analysis Batch: 88627 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 360-88533/1-A	Method Blank	Total/NA	Water	L107-06-1B	88533

# QC Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

## Method: 6010C - Metals (ICP)

Lab Sample ID: MB 360-88431/18

Matrix: Water

Analysis Batch: 88431

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			03/14/12 13:13	1
Chromium	ND		5.0	0.66	ug/L			03/14/12 13:13	1

Lab Sample ID: LCS 360-88431/17

Matrix: Water

Analysis Batch: 88431

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	5000	5060		ug/L		101	80 - 120
Chromium	1000	1000		ug/L		100	80 - 120

Lab Sample ID: LCSD 360-88431/22

Matrix: Water

Analysis Batch: 88431

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	5000	5170		ug/L		103	80 - 120	2	20
Chromium	1000	1020		ug/L		102	80 - 120	2	20

## Method: 300.0 - Chloride & Sulfate

Lab Sample ID: MB 360-88534/5

Matrix: Water

Analysis Batch: 88534

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			03/15/12 22:48	1
Chloride	ND		1.0	1.0	mg/L			03/15/12 22:48	1

Lab Sample ID: LCS 360-88534/6

Matrix: Water

Analysis Batch: 88534

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	83.3		mg/L		104	85 - 115
Chloride	40.0	41.3		mg/L		103	85 - 115

Lab Sample ID: MB 360-88537/3

Matrix: Water

Analysis Batch: 88537

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			03/16/12 16:41	1
Chloride	ND		1.0	1.0	mg/L			03/16/12 16:41	1

Lab Sample ID: LCS 360-88537/4

Matrix: Water

Analysis Batch: 88537

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	82.5		mg/L		103	85 - 115



# QC Sample Results

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

## Method: 300.0 - Chloride & Sulfate (Continued)

Lab Sample ID: LCS 360-88537/4

Matrix: Water

Analysis Batch: 88537

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	40.0	40.8		mg/L		102	85 - 115

## Method: L107-06-1B - Nitrogen Ammonia

Lab Sample ID: MB 360-88533/1-A

Matrix: Water

Analysis Batch: 88627

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 88533

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10	0.10	mg/L		03/19/12 11:49	03/20/12 16:11	1

Lab Sample ID: LCS 360-88533/2-A

Matrix: Water

Analysis Batch: 88627

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 88533

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	10.0	10.4		mg/L		104	90 - 110

## Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 360-88521/3

Matrix: Water

Analysis Batch: 88521

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			03/16/12 14:24	1

Lab Sample ID: LCS 360-88521/1

Matrix: Water

Analysis Batch: 88521

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1410	1400		umhos/cm		99	85 - 115

Lab Sample ID: 360-39540-3 DU

Matrix: Water

Analysis Batch: 88521

Client Sample ID: OC-GW-25

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	660		659		umhos/cm		0.3	20

# Lab Chronicle

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

**Client Sample ID: OC-GW-78S**

**Date Collected: 03/12/12 08:45**

**Date Received: 03/13/12 17:00**

**Lab Sample ID: 360-39540-1**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1	88431	03/14/12 15:36	TJS	TAL WFD
Total/NA	Analysis	SM 2510B		1	88521	03/16/12 14:37	GRB	TAL WFD
Total/NA	Analysis	300.0		1	88534	03/16/12 03:56	AMS	TAL WFD
Total/NA	Analysis	300.0		10	88534	03/16/12 04:13	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			88533	03/19/12 11:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	88627	03/20/12 16:40	RWE	TAL WFD

**Client Sample ID: OC-PZ-17-RR**

**Date Collected: 03/12/12 09:05**

**Date Received: 03/13/12 17:00**

**Lab Sample ID: 360-39540-2**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1	88431	03/14/12 15:39	TJS	TAL WFD
Total/NA	Analysis	SM 2510B		1	88521	03/16/12 14:39	GRB	TAL WFD
Total/NA	Analysis	300.0		1	88534	03/16/12 04:31	AMS	TAL WFD
Total/NA	Analysis	300.0		10	88534	03/16/12 04:48	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			88533	03/19/12 11:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	88627	03/20/12 16:41	RWE	TAL WFD

**Client Sample ID: OC-GW-25**

**Date Collected: 03/12/12 11:05**

**Date Received: 03/13/12 17:00**

**Lab Sample ID: 360-39540-3**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1	88431	03/14/12 15:42	TJS	TAL WFD
Total/NA	Analysis	SM 2510B		1	88521	03/16/12 14:45	GRB	TAL WFD
Total/NA	Analysis	300.0		10	88534	03/16/12 05:22	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			88533	03/19/12 11:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	88627	03/20/12 16:41	RWE	TAL WFD

**Client Sample ID: OC-PZ-18R**

**Date Collected: 03/12/12 10:20**

**Date Received: 03/13/12 17:00**

**Lab Sample ID: 360-39540-4**

**Matrix: Water**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1	88431	03/14/12 15:45	TJS	TAL WFD
Total/NA	Analysis	SM 2510B		1	88521	03/16/12 14:48	GRB	TAL WFD
Total/NA	Analysis	300.0		10	88537	03/16/12 23:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			88533	03/19/12 11:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		20	88627	03/20/12 16:42	RWE	TAL WFD

## Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

## Certification Summary

Client: Olin Corporation  
Project/Site: Olin Chemical Groundwater

TestAmerica Job ID: 360-39540-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

Accreditation may not be offered or required for all methods and analytes reported in this package . Please contact your project manager for the laboratory's current list of certified methods and analytes.

# State Accreditation Matrix

Method Name	Description	Primary Accreditation	
		New Hampshire (NELAC)	Mass
180.1	Turbidity, Nephelometric	P	P
245.1	Mercury (CVAA)	NP/P	NP
300	Anions, Ion Chromatography	NP/P	NP/P
410.4	COD	NP	NP
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P
524.2	Trihalomethane compounds	P	P
608	Organochlorine Pest/PCBs (list upon request)	NP	NP
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW	
1103.1	E.coli		ambient/source
3546	Microwave Extraction	SW	
5035	Closed System Purge and Trap	SW	
6020	Metals (ICP/MS) (list upon request)	NP	
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P	
3010A	Preparation, Total Metals	NP/P	
3020A	Preparation, Total Metals	NP/P	
3050B	Preparation, Metals	SW	
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP	
5030B	Purge and Trap	NP	
6010C	Metals (ICP)(list upon request)	NP/SW	
7196A	Chromium, Hexavalent	NP/SW	
7470A	Mercury (CVAA)	NP	
7471A	Mercury (CVAA)	SW	
8081B	Organochlorine Pesticides (GC)(list upon request)	NP/SW	
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW	
8260C	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW	
8270D	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW	
9012A	Cyanide, Total and/or Amenable	NP/SW	
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP	
9045C	pH	SW	
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)	NP/SW	
Enterolert	Enterococcus		ambient/source
L107041C	Nitrogen, Nitrate	NP	
L107-06-1B	Nitrogen Ammonia	NP	NP
L204001A CN	Cyanide, Total	P	NP/P
L210-001A	Phenolics, Total Recoverable	NP	NP
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)	NP/SW	
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)	NP/SW	
SM 2320B	Alkalinity	NP/P	NP/P
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P
SM 2540D	Solids, Total Suspended (TSS)	NP	NP
SM 3500 CR D	Chromium, Hexavalent	NP	
SM 4500 Cl F	Chlorine, Residual		NP
SM 4500 H+ B	pH	NP/P	NP/P
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP
SM 4500 P E	Phosphorus, Total	NP	NP
SM 4500 S2 D	Sulfide, Total	NP	
SM 5210B	BOD, 5-Day	NP	NP
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP
SM 9215E	Heterotrophic Plate Count (SimPlate)		P
SM 9222D	Coliforms, Fecal (Membrane Filter)		NP
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P
SM 9223	Coliforms, Total, and E.Coli (Enumeration)		P

Not all organic compounds are accredited under YNI

For methods with multiple compounds all compounds may not meet TNI criteria, a listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typical listing but is subject to change based on the laboratories current certification standing.

## Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 360-39540-1

**Login Number: 39540**

**List Source: TestAmerica Westfield**

**List Number: 1**

**Creator: Ard, Vanessa L**

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	IDs on containers do not match the COC for sample 4
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Chain of Custody Record

Westfield Executive Park 53 Southampton Road  
Westfield, MA 01085  
Phone (413) 572-4000 Fax (413) 572-3707

<b>Client Information</b> Client Contact: James Cashwell Company: Olin Corporation		Lab PM: Mason, Becky C E-Mail: becky.mason@testamericainc.com		Carrier Tracking No(s):		COC No:																	
Address: 61 Eames Street City: Wilmington State Zip: MA, 01887 Phone:		Due Date Requested: TAT Requested (days):		Analysis Requested		Job #:																	
Email: beguichard@olin.com Project Name: Olin Quarterly Groundwater Project #: 36001816 SSOW#:		PO #: REW00013 WO #:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Preservation Codes: M - Hexane N - None O - AshNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - ph 4.5 Z - other (specify)																	
<b>Sample Identification</b>		<b>Sample Date</b>		<b>Sample Time</b>		<b>Sample Type</b> (C=Comp, G=grab)		<b>Matrix</b> (W=water, S=solid, O=water/oil, BT=Tissue, Asar)		<b>Field Filtered Sample (Yes or No)</b>		<b>Perform MS/MSD (Yes or No)</b>		<b>LACH 107.06.1-B - Ammonia</b>		<b>6010B - Field filtered Al/Cl</b>		<b>2510B Spec. Cond., 300.0.28D SO4/Cl</b>		<b>Total Number of containers</b>		<b>Special Instructions/Note:</b>	
GW-78S		3/12/12		8:45		G		Water		Y		X		X		X		3		MCP			
PZ-17-RR		3/12/12		9:05		G		Water		Y		X		X		X		3					
GW-25		3/12/12		11:05		G		Water		Y		X		X		X		3					
OC-GW-78S		3/12/12		10:20		G		Water		Y		X		X		X		3					